

Docket No. HOE96/F319CON

PATENT

AMENDMENTS TO THE CLAIMS

1. (cancelled)

2. (previously presented) A process for preparing an organically modified aerogel, which comprises

- a) introducing a hydrogel formed at pH greater than 3 as initial charge,
- b) modifying the surface of the hydrogel obtained in step a) by mixing the hydrogel with a silylating agent to form a hydrophobic surface modified gel, and
- c) drying the surface-modified gel obtained in step b),

wherein a silicatic hydrogel is introduced as initial charge in step a).

3. (previously presented) A process for preparing an organically modified aerogel, which comprises:

- a) forming a silicatic hydrogel at pH 3;
- b) subjecting the silicatic hydrogel formed in step a), optionally after intermediate treatment steps, to surface modification by mixing the hydrogel with a silylating agent to form a surface modified gel; and
- c) drying the surface-modified gel obtained in step b), optionally after additional treatment steps,

wherein the silicatic hydrogel is prepared by bringing an aqueous waterglass solution to a pH 3 with the aid of an acidic ion exchanger resin or a mineral acid, and polycondensing the resulting silicic acid by addition of a base to form an SiO<sub>2</sub> gel.

4. (original) The process as claimed in claim 2, wherein the silicatic hydrogel introduced as initial charge in step a) is prepared by obtaining it from an aqueous waterglass solution with the aid of at least one organic and/or inorganic acid via the intermediate stage of a silica sol.

Docket No. HOE96/F319CON

PATENT

5. (cancelled)

6. (currently amended) The process as claimed in claim 2, wherein additives are added before and/or during the preparation of the silicatic hydrogel.

7. (original) The process as claimed in claim 6, wherein additives added are opacifiers and/or fibers.

8 - 55. (cancelled)

56. (previously presented) A process for producing an organically modified lyogel, which comprises:

- a) forming a hydrogel at pH > 3;
- b) surface modifying the hydrogel formed in step a), optionally after intermediate treatment steps, by mixing the hydrogel with a silylating agent to form a hydrophobic surface modified gel; and
- c) optionally after additional treatment steps, drying the surface modified gel obtained in step b),

wherein the hydrogel is formed in step a) by lowering the pH of an aqueous waterglass solution.

57. (previously presented) A process for producing an organically modified lyogel, which comprises:

- a) forming a hydrogel at pH between pH 3 and pH 8;
- b) surface modifying the hydrogel formed in step a), optionally after intermediate treatment steps, by mixing the hydrogel with a silylating agent to form a hydrophobic surface modified gel; and
- c) optionally after additional treatment steps, drying the surface modified gel obtained in step b),

Docket No. HOE96/F319CON

PATENT

wherein the hydrogel is formed in step a) at pH between pH 3 and pH 8 and wherein the pH of an aqueous waterglass solution is lowered in step a) to a pH value not less than 3.

58. (currently amended) The process according to claim 57 wherein ~~a) a~~ the hydrogel is formed by lowering the pH of ~~an~~ the aqueous waterglass solution by addition of acid to  $\text{pH} \geq 8$  and, in a further step, establishing the pH between pH 3 and pH 8; ~~b) the hydrogel formed in step a) optionally after intermediate treatment steps, is subjected to surface modification by mixing the hydrogel with a silylating agent to form a surface modified gel; and c) the surface modified gel obtained in step b), optionally after additional treatment steps, is dried.~~

59. (previously presented) A process for producing an organically modified lyogel, which comprises:

- a) forming a hydrogel at  $\text{pH} > 3$ ;
- b) surface modifying the hydrogel formed in step a), optionally after intermediate treatment steps, by mixing the hydrogel with a silylating agent to form a hydrophobic surface modified gel; and
- c) optionally after additional treatment steps, drying the surface modified gel obtained in step b),

wherein the hydrogel is formed in step a) by addition of acid to aqueous waterglass solution and without subsequent addition of base in step a).

60-61 (cancelled)

62. (previously presented) A process for producing an organically modified aerogel, which comprises:

- a) forming a hydrogel at  $\text{pH} > 3$ ;
- b) surface modifying the hydrogel formed in step a), optionally after intermediate treatment steps, by mixing the hydrogel with a silylating agent to form a surface modified gel; and

Docket No. HOE96/F319CON

PATENT

c) optionally after additional treatment steps, drying the surface modified gel obtained in step b);

wherein steps a) and b) are carried out as a semi-continuous process, wherein a continuous or semi-continuous stream of acid is mixed with a continuous or semi-continuous stream of aqueous waterglass solution.

63. (previously presented) The process according to claim 62, wherein the acid stream is admixed with the aqueous waterglass solution through a mixing nozzle.

64-66. (cancelled)

67. (previously presented) The process for producing an organically modified aerogels according to claim 62, wherein the hydrogel is formed in step a) at pH between pH 3 and pH 8.

68. (previously presented) A process for producing an organically modified aerogels, wherein:

- a) a hydrogel is formed at  $\text{pH} \geq 3$ ;
- b) the hydrogel formed in step a), optionally after intermediate treatment steps, is subjected to surface modification by mixing the hydrogel with a silylating agent to form a surface modified gel; and
- c) the surface modified gel obtained in step b), optionally after additional treatment steps, is dried;

wherein step a) and b) are carried out as a continuous process and a continuous or semi-continuous stream of acid is mixed with a continuous or semi-continuous stream of aqueous waterglass solution.

69-70. (cancelled)

Docket No. HOE96/F319CON

PATENT

71. (currently amended) The process of claim 3 further comprising washing the silicatic hydrogel with water to free it from any electrolyte.

72-75. (cancelled)

76. (previously presented) A process for preparing an organically modified aerogel, which comprises:

- a) introducing an inorganic hydrogel formed at pH greater than 3 as initial charge,
- b) modifying the surface of the hydrogel obtained in step a) by mixing the hydrogel with a silylating agent to form a hydrophobic surface modified gel, and
- c) drying the surface-modified gel obtained in step b).

77. (previously presented) The process according to claim 76, wherein the hydrogel obtained in step a) is aged before being surface-modified in step b).

78. (cancelled)

79. (previously presented) The process as claimed in claim 76, wherein the silylating agent is used in liquid form and/or as a gas or vapor.

80. (currently amended) The process as claimed in claim 76 ~~or 79~~, wherein the silylating agent employed comprises at least one silane of the formula  $R^1_{4-n}SiCl_n$  or  $R^1_{4-n}Si(OR^2)_n$  where  $n = 1$  to 4 and where  $R^1$  and  $R^2$  independently of one another are identical or different and are each a hydrogen atom or a nonreactive, organic, linear, branched, cyclic, saturated or unsaturated, aromatic or heteroaromatic radical.

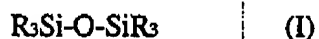
81. (previously presented) The process as claimed in claim 80, wherein trimethylchlorosilane is employed as silylating agent.

Page 6

Docket No. HOE96/F319CON

PATENT

82. (currently amended) The process as claimed in claim 76 ~~or 79~~, wherein the silylating agent employed comprises at least one disiloxane of the formula I and/or one disilazane of the formula II



where the radicals R, independently of one another, are identical or different and are each a hydrogen atom or a nonreactive, organic, linear, branched, cyclic, saturated or unsaturated, aromatic or heteroaromatic radical.

83. (previously presented) The process as claimed in claim 82, wherein the silylating agent employed in step b) is a symmetrical disiloxane.

84. (previously presented) The process as claimed in claim 82, wherein the silylating agent employed in step b) is disiloxane in which all radicals R are identical.

85. (previously presented) The process as claimed in claim 82, wherein the silylating agent employed is hexamethyldisiloxane.

86. (previously presented) The process as claimed in claim 76, wherein at least one acid and/or base is introduced as a catalyst in the hydrogel before surface modification.

87. (previously presented) The process as claimed in claim 86, wherein HCl is used as acid.

88. (previously presented) The process as claimed in claim 76, wherein the hydrogel is introduced as initial charge in the silylating agent, and then at least one acid and/or base is added.

89. (previously presented) The process as claimed in claim 88, wherein HMDSO is used as

Page 7

Docket No. HOE96/F319CON

PATENT

silylating agent.

90. (previously presented) The process as claimed in claim 88 or 89, wherein hydrochloric acid is used as acid.

91. (previously presented) The process as claimed in claim 76, wherein the silylating agent is generated shortly before and/or during the surface modification.

92. (previously presented) The process as claimed in claim 76, wherein the surface modification is accelerated by means of a catalyst.

93. (previously presented) The process as claimed in claim 76, wherein at least one carrier gas or carrier gas stream is used in step b) in addition to the silylating agent.

94. (previously presented) The process as claimed in claim 76, wherein some of the water in pores of the hydrogel reacts with the silylating agent to form a water-insoluble compound.

95. (previously presented) The process as claimed in claim 94, wherein HMDSO is formed.

96. (previously presented) The process as claimed in claim 76, wherein an outer surface of the hydrogel obtained in step a) is dried prior to surface modification.

97. (previously presented) The process as claimed in claim 76, wherein the surface-modified gel is washed with a protic or aprotic solvent prior to step c).

98. (currently amended) The process as claimed in claim 76, wherein the surface-modified gel is washed with the a silylating agent prior to step c).

99. (previously presented) The process as claimed in claim 76, wherein the surface-modified

Docket No. HOE96/F319CON

PATENT

gel is subjected to subcritical drying in step c).

100. (previously presented) The process as claimed in claim 76, wherein the gel obtained in step a) is reacted, prior to silylation, with a solution of a condensable orthosilicate of the formula  $R^{14-n}Si(OR^2)_n$ , where  $n = 2$  to 4 and  $R^1$  and  $R^2$  independently of one another are hydrogen atoms or linear or branched  $C_1$ - $C_6$ -alkyl, cyclohexyl or phenyl radicals, or with an aqueous silicic acid solution.

101. (previously presented) The process as claimed in claim 76, wherein surface modification is carried out in the presence of additives in the hydrogel.

102. (previously presented) The process as claimed in claim 101, wherein the additives comprise ionic compounds.

103. (previously presented) The process as claimed in claim 101 or 102, wherein the additives comprise opacifiers.

104. (previously presented) A process for producing an organically modified lyogel, which comprises

- a) introducing an inorganic hydrogel formed at pH greater than 3 as initial charge, and
- b) subjecting the hydrogel obtained in step (a) to surface modification by mixing the hydrogel with a silylating agent to form a surface modified gel.

105. (previously presented) A process for producing an organically modified lyogel, which comprises:

- a) forming an inorganic hydrogel at pH > 3;
- b) surface modifying the hydrogel formed in step a), optionally after intermediate treatment steps, by mixing the hydrogel with a silylating agent to form a hydrophobic



Docket No. HOE96/F319CON

PATENT

surface modified gel; and

c) optionally after additional treatment steps, drying the surface modified gel obtained in step b).

106. (previously presented) The process according to claim 105, wherein the hydrogel is formed in step a) at pH between pH 3 and pH 8.

107. (previously presented) The process according to claim 2 in which the silicatic hydrogel comprises zirconium, aluminum, titanium, vanadium and/or iron compounds.

108. (previously presented) The process according to claim 76, wherein step a) and b) are carried out as a semi-continuous process.

109. (previously presented) The process according to claim 76, wherein steps a) and b) are carried out as a continuous process.

110. (previously presented) The process according to claim 76, wherein step b) results in a hydrophobic gel in a liquid phase substantially immiscible with water, which liquid is separated from an aqueous phase formed by the water from the hydrogel.

111 (previously presented) The process of claim 91, wherein the silylating agent is generated shortly before or during the surface modification by means of an acid.

112. (previously presented) The process of claim 100, wherein said condensible orthosilicate is an alkyl or aryl orthosilicate.

113. (previously presented) The process of claim 102, wherein the additives used comprise NaCl.

Docket No. HOE96/F319CON

*PATENT*

114. (previously presented) The process as claimed in claim 103, wherein the additives used as opacifiers comprise IR opacifiers.

115. (previously presented) The process as claimed in claim 76 in which the inorganic hydrogel is a silicatic hydrogel.

116. (cancelled)

117. (previously presented) The process as claimed in claim 105 in which the inorganic hydrogel is a silicatic hydrogel.

118. (cancelled)

119 (previously presented) The process of claim 59 wherein step a) comprises forming a hydrogel at pH between pH 3 and pH 8.